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ABSTRACT

This study investigated how economically and sociologically underprivileged students readied themselves for college, highlighting factors affecting the lowest socioeconomic status (SES) students' chances to: secure college qualifications, graduate from high school, and apply to four-year institutions. Data from the 1998 National Educational Longitudinal Study were used to examine the three tasks. A model was developed to portray the college choice process as the by-product of interrelated influences beginning in 8th grade and continuing until college enrollment. The influences included: academic ability, amount and quality of parental involvement/encouragement, early educational and occupational aspirations, acquisition of college qualifications, and availability of information about college. Most of the lowest SES 8th graders had parents with no college experience and were exposed to factors placing them at risk of dropping out of high school. About 81 percent of 8th graders who completed the three tasks enrolled in college by 1994. Securing college qualifications correlated with SES, with the lowest SES students least likely to secure minimal qualifications. Parental involvement, early planning for college, and experiencing at-risk factors most affected students' chances of becoming college qualified. Rate of graduation from high school correlated and college application rates varied in direct relation to SES. (Contains 61 references.) (SM)

Using National Databases to Study the College Choice of Low-SES Students

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EXECUTIVE SUMMARY

Using data from the National Educational Longitudinal Study of 1988 (NELS:88), this report examines the three tasks that 1988 socioeconomically disadvantaged students must complete on their path to college. Seeking an explanation of the factors enabling poor students to succeed at each task, this report advances a model portraying the path to college as the by-product of academic ability, amount and quality of parental involvement and encouragement, early educational and occupational aspirations, acquisition of college qualifications, and availability of information about college. Some of the main findings are:

Who is a lowest socioeconomic status 8th grader?

- Seventy-seven percent of lowest socioeconomic status (SES) 8th graders have parents with no collegiate experiences. Nearly all of upper-SES 8th graders (99.3%) grew up among parents with some experience of postsecondary education.

- In contrast to better-off socioeconomic status 8th graders, the poorest 8th graders were more prone to be exposed to factors placing them at risk of dropping out from high school. Those at-risk factors included: low grades during junior high school, a history of high school dropouts in the family, being raised by a single parent, being held back a grade, and changing schools more than twice.

What promotes success 'on the path to college'?

- Enrolling in a four-year institution rests on the completion of at least three critical tasks: a) acquiring at least minimal college qualifications, b) graduating from high school, and c) applying to a four-year college or university. Eighty-one percent of those 8th graders who completed these three tasks enrolled in college by 1994.

- Nearly 54% of all 1988 8th graders secured at least minimal college qualifications by the senior year. Meeting minimal college qualifications was successfully accomplished by 80% of the upper-SES 8th graders. In contrast, only 29% of lowest-SES students completed this task.

- Eighty-eight percent of all 1988 8th graders graduated from high school by 1992. Upper-SES 8th graders' high school graduation rate was 98%. Only 73% of lowest-SES 1988 8th graders secured a high school diploma by 1992.

- By 1994, 36% of all 1988 8th graders enrolled at a 4-year institution. The corresponding college participation rate for high-SES 8th graders was 54%. Only 14.4% of the lowest-SES 1988 8th graders enrolled at a 4-year institution by 1994 (see Figures 1-6).

Acquisition of college qualifications

- Securing college-qualifications correlates with socioeconomic status (r = .377).
- In the aggregate, lowest-SES students were 51%, 30% and 17% less likely to secure minimal college qualifications than their highest, middle-upper and middle-lowest SES counterparts.
- Parental involvement, early planning for college and experiencing at risk factors most affect a student's chances to become college qualified.
- The gap between lowest-SES and upper-SES students narrows from 51% to 15% once factors, such as at-risk characteristics and parental involvement, are taken into account.

High School Graduation

- The rate at which 1988 8th graders graduated from their high school correlates with their socioeconomic status (r=.291).
- The poorest 1988 8th graders' graduation rate lagged nearly 25% behind that of their upper-SES counterparts.
- Across all students, meeting college-qualifications increased the chances of completing high school by 11.4%. Among the poorest 1988 8th graders, becoming college qualified by the senior year enhanced the chances of completing high school by nearly 26%.
- The gap in graduation rates between lowest-SES and upper-SES students narrows to nearly 8% once college-choice factors, such as college qualifications and early planning, are taken into account.

Applying for College

- College application rates vary in direct relation with socioeconomic status (r =.414).
- In the aggregate, the difference in college application rates between the poorest students and upper-SES students is 54%.
- Motivational factors, college qualifications, parental involvement and encouragement, information about financial aid and school-based resources matter the most in increasing the chances of applying for college.
- Controlling for the factors that influence the chance of applying reduced the gap in college application rates between lowest-SES and upper-SES from 54% to nearly 26%.

Introduction

Three critical tasks on the path to college

On his path to immortality, Hercules faced twelve tasks of increasing difficulty. Each task demanded different skills, strengths and endurance. He managed to overcome each task not only because of his physical and intellectual prowess, but also thanks to the assistance of divine and human intervention at key points. Similar to Hercules' odyssey, college enrollment requires the successful completion of three critical tasks. Each task is completed not only on the merits of the student, but when he or she receives critical support and assistance (e.g. Horn, 1997; Horn & Nuñez, 2000; Chen & Kauffman, 1997; Berkner & Chavez, 1997). The first task is acquiring the necessary academic qualifications for college work. The second is securing a high school diploma, and the third is actually applying and enrolling in a four-year institution of higher education. Our examination of the college choice process experienced by a nationally representative sample of 1988 8th graders confirms that college enrollment is, indeed, a by-product of these three tasks.

When one examines a student's progression through these three critical checkpoints, we find the defining characteristic of the college enrollee is the acquisition of college qualifications[1] that begins as early as the 8th grade (See Figure 1) [2]. Students that secure college qualifications while in high school have a higher chance of enrolling in college than those who did not. Sixty-nine percent of college qualified high school graduates enrolled in a four-year institution[3] immediately following high school completion, while only 9.9% of those who did not secure college qualifications enrolled. Even obtaining only a minimum level of college qualifications increased a student's likelihood of enrolling in a 4-year institution. Thirty percent of those 8th graders who secured only minimum college qualifications during high school enrolled in a 4-year institution after graduation.

Figure 1 also shows the importance of securing college qualifications as an important precondition of high school graduation. Nearly all students securing minimal qualifications and above completed high school, whereas only 77% of those students not meeting college qualifications secured a high school diploma.

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[1] Developed by Berkner and Chavez (1997), the college-qualification index approximates college admissions criteria by collapsing cumulative academic course GPA, senior class rank, aptitude test scores, and the SAT and ACT scores. Adjustments were made to account for the nature of a student's academic program. Berkner and Chavez found just meeting minimal college qualifications significantly predicts college enrollment (see Table III.1 in Appendix III). For the purpose of this report, the college-qualified categories of somewhat qualified, very qualified and highly qualified were collapsed into the category of qualified.

[2] Figures 1-6 are based on panel weight (F3PNLWT), which estimated the population of 8th graders to be 2,968,427 in 1988 (see Appendix II). Of them, only 89.1% (2,668,022) had valid information in the college-qualification index. Subjects with missing values for high school completion and four-year applications have also been excluded from analysis.

As important as it is to become college-qualified and obtain a high school diploma to enroll in a 4-year institution, college attendance can only be triggered when the student actually submits college applications. The application process in itself presents numerous hurdles. Those hurdles include concerns over college costs, uncertainties in the selection of major, completion of college applications forms and filling out extremely complex financial aid forms. Even for the most college-qualified students, the application process may present intimidating challenges. Eighteen percent of those most qualified students did not apply to a 4-year institution. Regardless of qualifications, if students opt not to apply, they are not eligible to enroll.

College Choice Variance by Socioeconomic Status

Substantial differences in the patterns of college choice emerge when one takes into account a student's socioeconomic status (SES). Seventy-one percent of the lowest-SES students do not obtain the academic qualifications necessary to support college enrollment. Lowest-SES students are 24.2% less likely to be qualified than the national average; fully 71% of lowest-SES students fail to gain the requisite qualifications. In contrast, only 30.3% of the highest-SES students do not obtain the requisite college qualifications. Interestingly, the graduation rates among the lowest-SES students at least minimally qualified are indistinguishable from the corresponding graduation rates for the highest-SES students (See Figures 2 and 3). Apparently, once students overcome the college qualification hurdle, the chances for lowest-SES students to obtain a high school diploma even out.

Completing the third task, actually applying to a four-year institution, appears to be particularly challenging for the lowest-SES students. Only 65.5% of the college qualified, high school graduates from lowest-SES backgrounds actually apply to a 4-year institution. This rate is 16 percent and 22 percent below the national rate of similarly qualified 8th graders and the rate for students from high-SES background, respectively.

Once lowest-SES students complete the third task and submit an application, their chances of enrolling in a 4-year institution improve dramatically to the point of closely resembling the national average and the rate for the highest-SES students. Among qualified, lowest-SES, high school graduates, 80 percent enroll in a 4-year institution. College attendance rates for the high-SES and average 8th graders were 88.8% and 87%, respectively.

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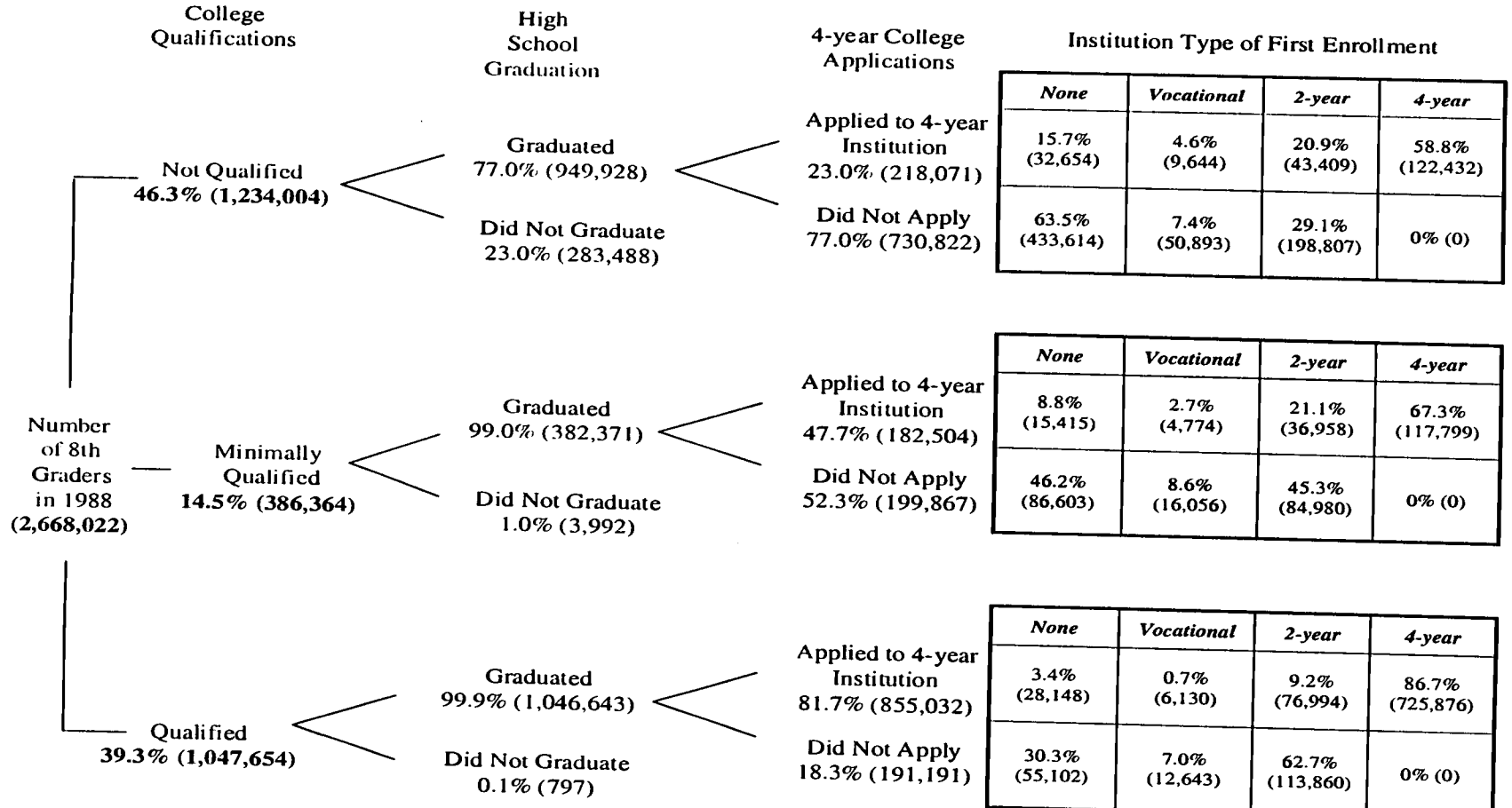
[3] College enrollment was ascertained using F3SEC2A1, an index developed by Berkner and Chavez tracking first type of institution attended as of 1994. See Table III. 1 in Appendix III.

Figure 1. College Choice Process for 1988 8th Grade Students



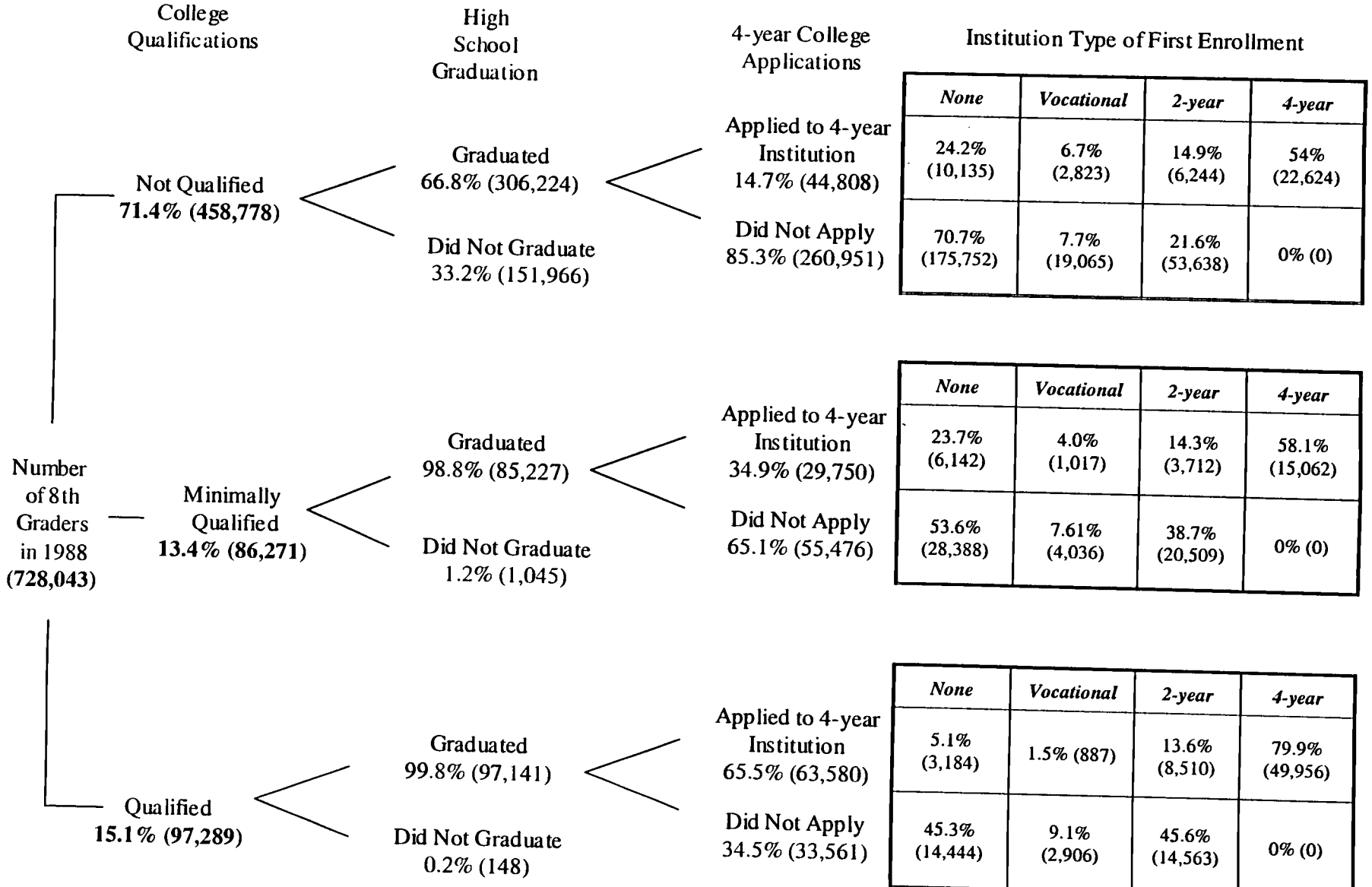
None	*Vocational*	*2-year*	*4-year*
15.7% (32,654)	4.6% (9,644)	20.9% (43,409)	58.8% (122,432)
63.5% (433,614)	7.4% (50,893)	29.1% (198,807)	0% (0)

None	*Vocational*	*2-year*	*4-year*
8.8% (15,415)	2.7% (4,774)	21.1% (36,958)	67.3% (117,799)
46.2% (86,603)	8.6% (16,056)	45.3% (84,980)	0% (0)

None	*Vocational*	*2-year*	*4-year*
3.4% (28,148)	0.7% (6,130)	9.2% (76,994)	86.7% (725,876)
30.3% (55,102)	7.0% (12,643)	62.7% (113,860)	0% (0)

Based on National Educational Longitudinal Study 1988

Figure 2. College Choice Process for Lowest SES Students



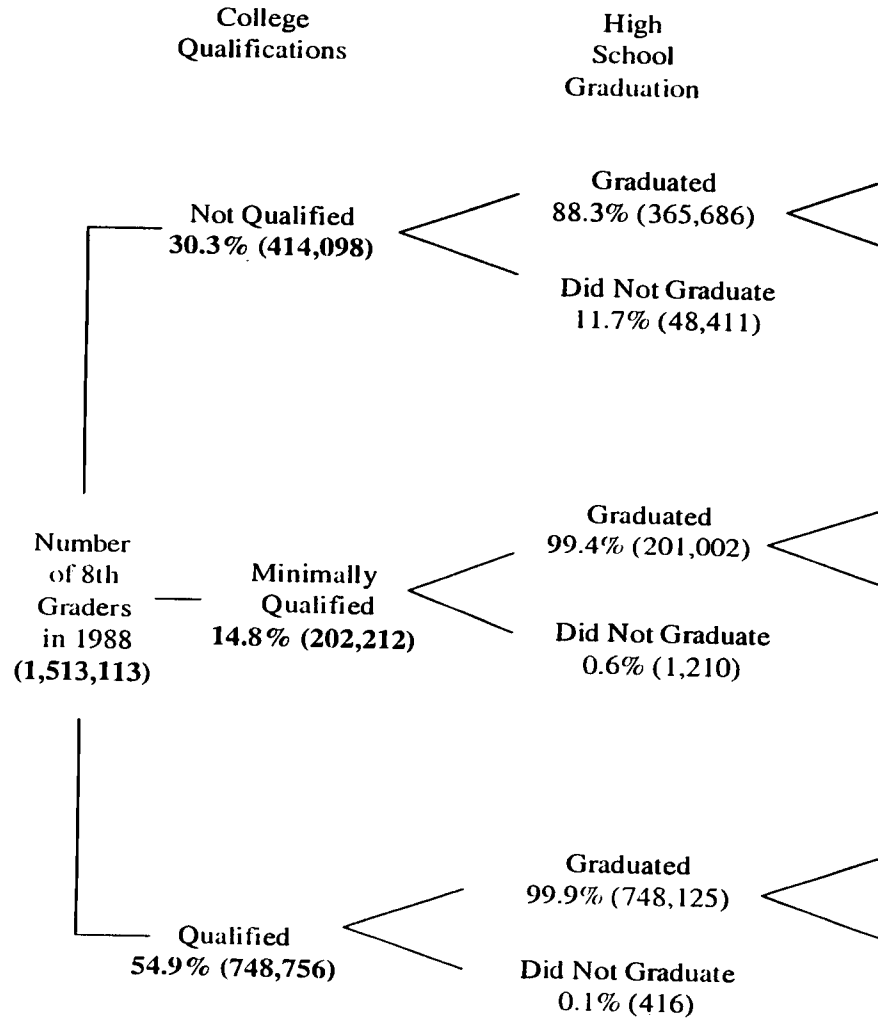
	None	*Vocational*	*2-year*	*4-year*
Not Qualified				
Applied to 4-year Institution 14.7% (44,808)	24.2% (10,135)	6.7% (2,823)	14.9% (6,244)	54% (22,624)
Did Not Apply 85.3% (260,951)	70.7% (175,752)	7.7% (19,065)	21.6% (53,638)	0% (0)

	None	*Vocational*	*2-year*	*4-year*
Minimally Qualified				
Applied to 4-year Institution 34.9% (29,750)	23.7% (6,142)	4.0% (1,017)	14.3% (3,712)	58.1% (15,062)
Did Not Apply 65.1% (55,476)	53.6% (28,388)	7.61% (4,036)	38.7% (20,509)	0% (0)

	None	*Vocational*	*2-year*	*4-year*
Qualified				
Applied to 4-year Institution 65.5% (63,580)	5.1% (3,184)	1.5% (887)	13.6% (8,510)	79.9% (49,956)
Did Not Apply 34.5% (33,561)	45.3% (14,444)	9.1% (2,906)	45.6% (14,563)	0% (0)

Based on National Educational Longitudinal Study 1988

Figure 3. College Choice Process for High SES Students*



Institution Type of First Enrollment

None	*Vocational*	*2-year*	*4-year*
10.0% (11,918)	4.8% (5,724)	20.6% (24,504)	64.5% (76,579)
52.9% (119,493)	6.3% (14,227)	40.7% (91,966)	0% (0)

None	*Vocational*	*2-year*	*4-year*
5.7% (6,469)	3.2% (3,561)	19.6% (22,260)	71.5% (81,177)
38.6% (30,397)	10.6% (8,339)	50.8% (40,018)	0% (0)

None	*Vocational*	*2-year*	*4-year*
2.9% (18,287)	0.6% (3,395)	8.1% (52,026)	88.8% (565,743)
17.9% (16,025)	7.5% (6,708)	74.7% (66,984)	0% (0)

Based on National Educational Longitudinal Study 1988

*Includes Quartiles 3 and 4

Unfortunately, the use of proportions to portray and map the longitudinal stages of the college choice process masks vast discrepancies in the actual number of 8th graders completing these tasks within each socioeconomic group. On a national basis, only 278 out of 1000 8th graders that secured college qualifications, became high school graduates, and applied to 4-year institutions actually enrolled in a 4-year institution (See Figure 4). Among upper-SES students, 424 out of 1000 that acquired college qualifications, graduated from high school, and applied to a 4-year institution enrolled in a 4-year college or university (See Figure 5). Sadly, only 79 out of 1000 lowest-SES students overcame the same hurdles as their upper-SES counterparts and enrolled in a 4-year institution by 1994 (See Figure 6).

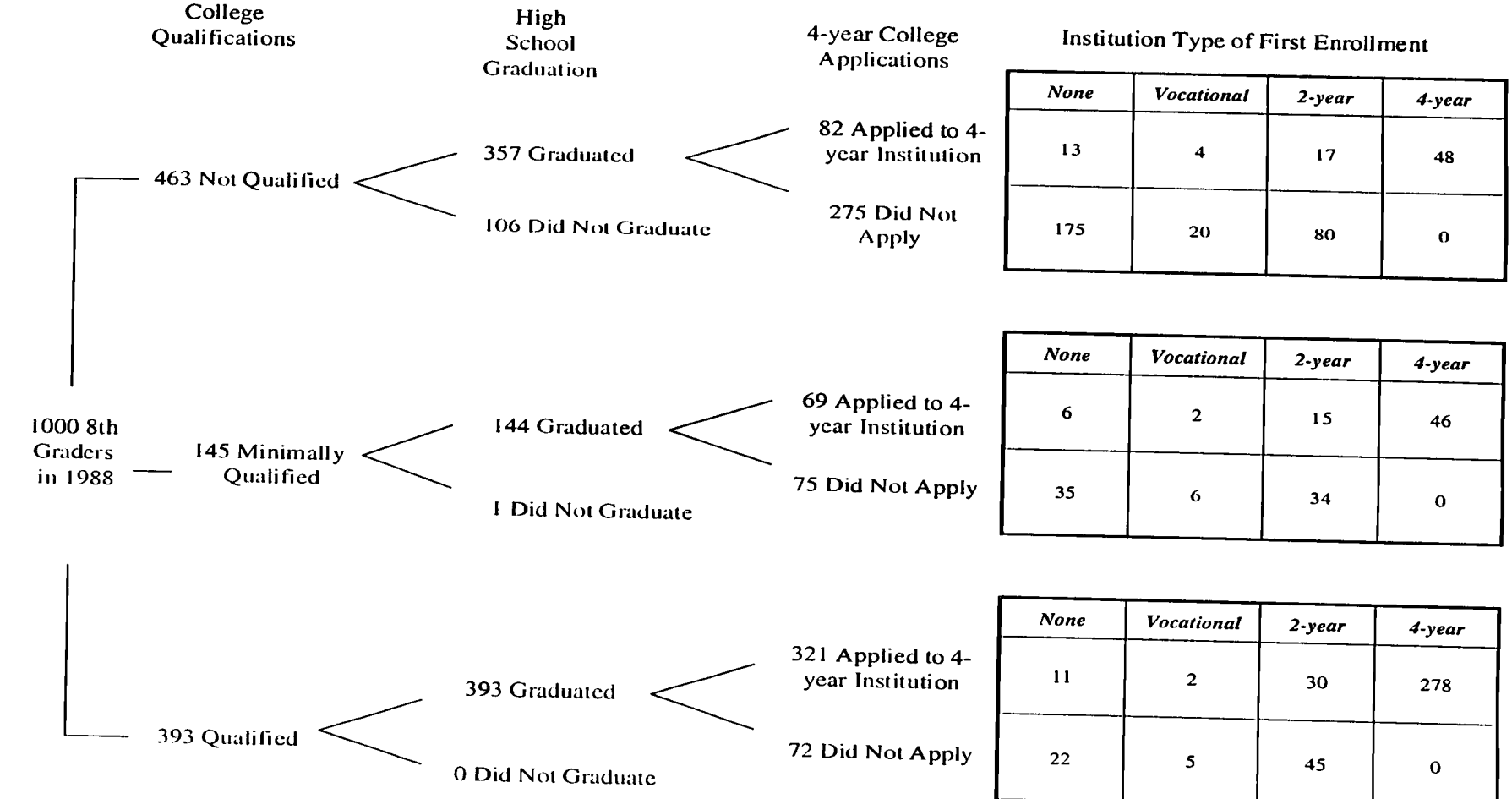
Purpose Statement

This report seeks to gain a better understanding of how economically and sociologically underprivileged Americans ready themselves for college. In so doing, it attempts to highlight those factors that affect the chances for lowest-SES students to secure college qualifications, graduate from high school, and apply to a four-year institution. To do this, we will first describe a model portraying the college choice process as the by-product of interrelated influences that begin as early as the 8th grade and continue until the high school graduate enrolls in college. Next. we will provide a profile of how is a lowest-SES 8th grader. The next sections will summarize our findings regarding the extent to which risk factors, along with other factors important to the college choice process, affect the acquisition of college qualifications, graduation from high school, and application to a four-year institution.

Because many of the college choice variables examined are intertwined, we used logistic regression to single out the net effects of individual variables at each step on the path to college. The steps examined by our analysis were: a) acquisition of college qualifications, b) graduation from high school. and c) applying to a four-year college or university.

This work builds upon the college choice literature, while filling gaps with original analysis of the National Education Longitudinal Study of 1988. Of the national databases examined, this database is best suited to examine the three tasks critical to college choice because it tracks students from the 8th grade until after high school graduation. The vast explanatory potential of the NELS database is only now beginning to be tapped, and provides more up to date knowledge on how low-income students make college attendance decisions.

Figure 4. College Choice Process for 1000 1988 8th Grade Students



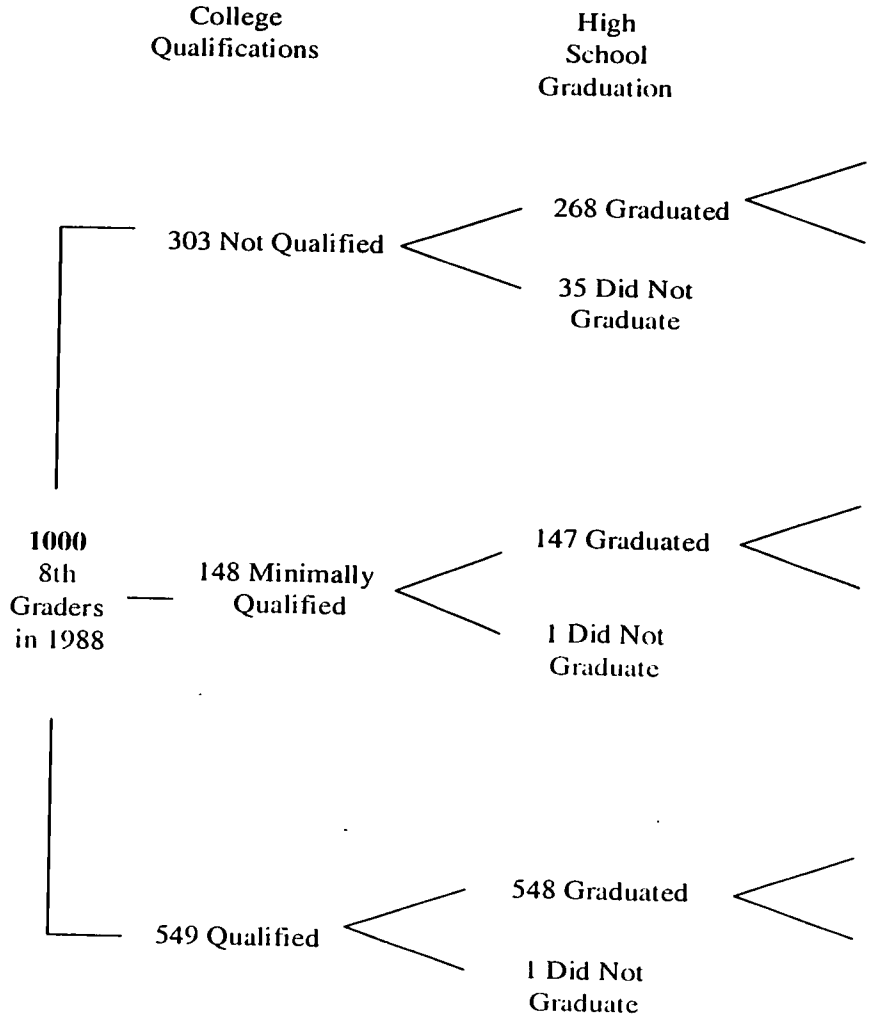
None	*Vocational*	*2-year*	*4-year*
13	4	17	48
175	20	80	0

None	*Vocational*	*2-year*	*4-year*
6	2	15	46
35	6	34	0

None	*Vocational*	*2-year*	*4-year*
11	2	30	278
22	5	45	0

Based on National Educational Longitudinal Study 1988

Figure 5. College Choice Process for 1000 High SES Students*



Institution Type of First Enrollment

None	*Vocational*	*2-year*	*4-year*
9	4	19	57
95	11	73	0

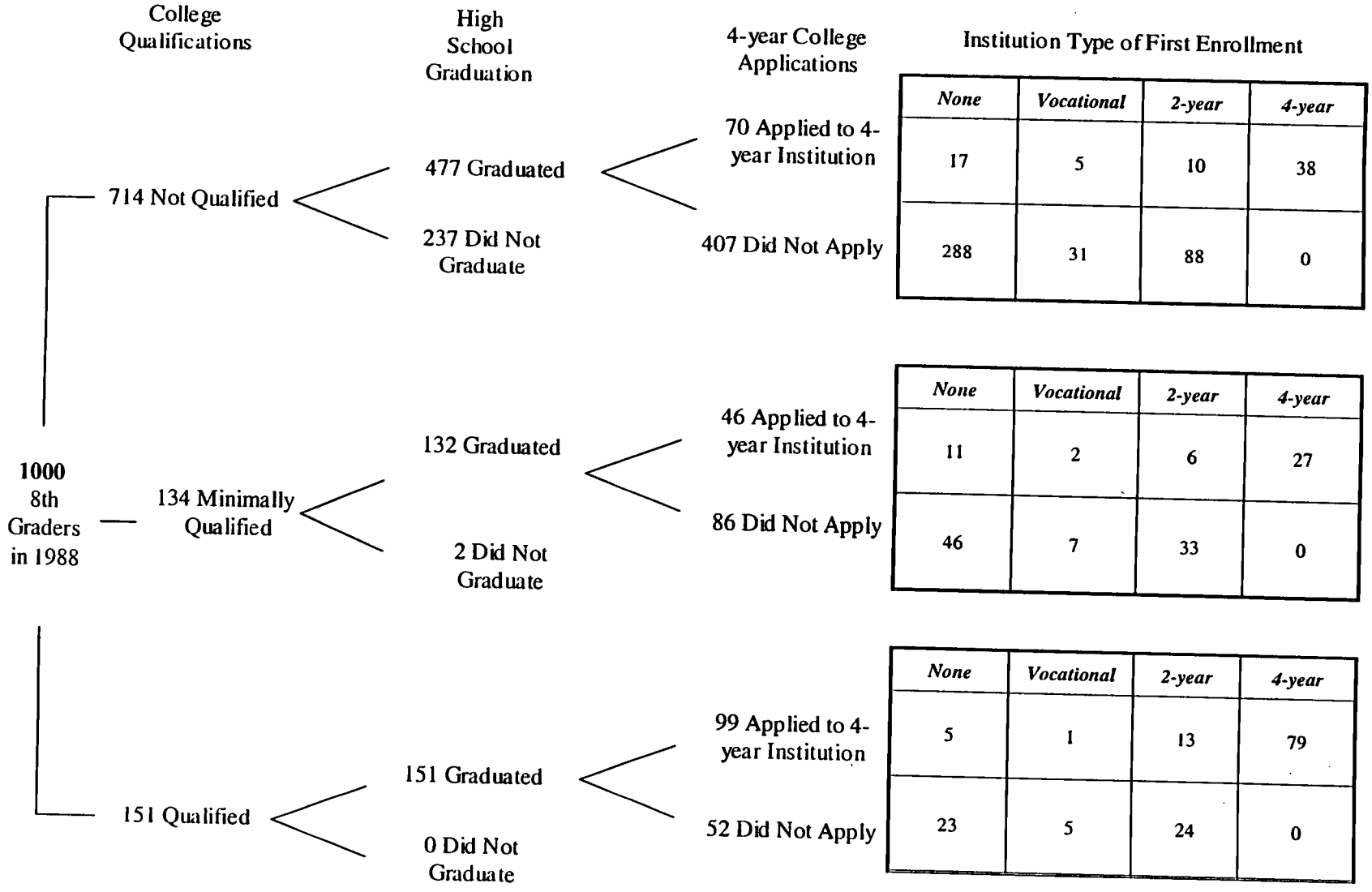
None	*Vocational*	*2-year*	*4-year*
5	2	17	61
24	6	32	0

None	*Vocational*	*2-year*	*4-year*
14	2	38	424
13	5	52	0

Based on National Educational Longitudinal Study 1988

*Includes Quartiles 3 and 4

Figure 6. College Choice Process for 1000 Low SES Students



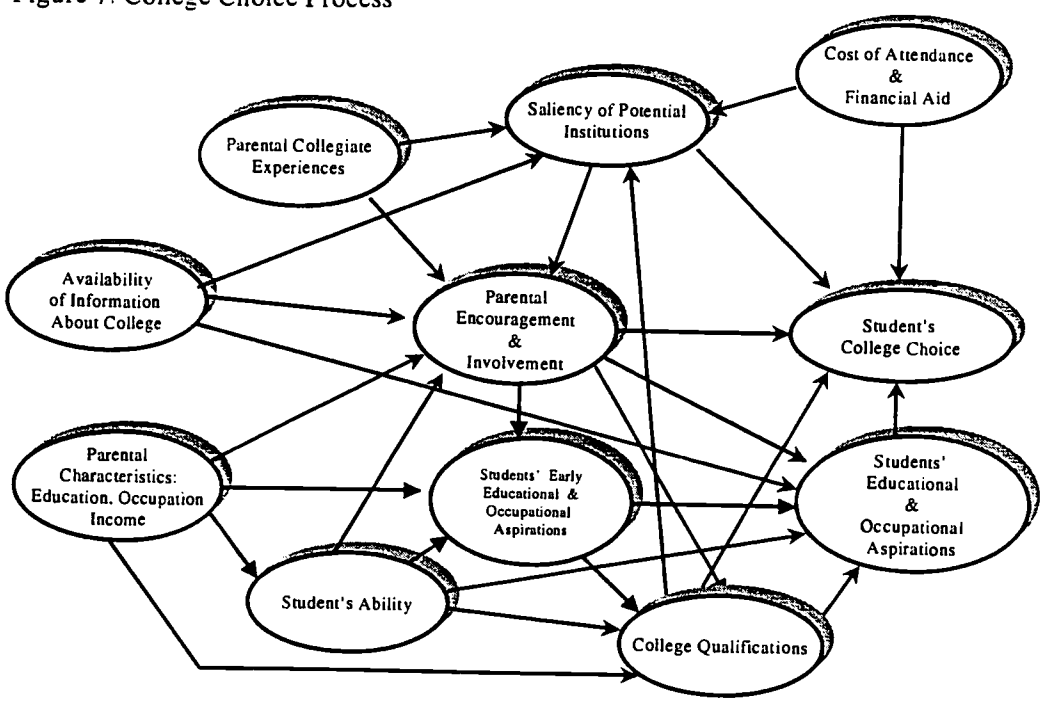
Based on National Educational Longitudinal Study 1988

The College Choice Model

This report follows a conceptual framework that views a students' college choice as a three-stage, longitudinal process that begins as early as the 8th grade. Such an approach is consistent with the extant literature showing that collegiate experiences and outcomes are intrinsically and unavoidably linked with the decisions, plans and actions students and their families undertook at the secondary level (e.g. Hossler, Schmit, & Vesper, 1999; St. John, Paulsen, & Starkey, 1996).

Figure 7 offers a schematic representation of the process linking the three college choice stages based on extant college choice literature. Parental encouragement and involvement, a pivotal force in the emergence of occupational and educational aspirations, is conditioned by the ability and high school preparation of the child, parental and sibling educational attainment, and access to information about college and costs. Parental encouragement, the availability of information about college, and perceived cost/benefit analysis of attending college also shape the institution set the student and family will seriously consider (e.g., McDonough, 1997). In turn, the final choice decision depends on the saliency of institutions, parental encouragement, financial considerations, the student's high school academic resources, the student's educational and occupational aspirations, and, of course, the student's academic abilities.

Figure 7. College Choice Process



Source: Based on Berkner & Chavez (1997), Flint (1993, 1997); Horn (1997); Hossler & Vesper (1993); Hossler, Schmit & Vesper, (1999); Perna (2000); Sewell & Hauser (1975); Stage & Hossler (1989); St. John (1990); Terenzini, Cabrera & Bernal (in press).

Validity of Socioeconomic Status (SES)

In this report, we use SES instead of raw income data for analysis. Socioeconomic status[4], as reflected in most of the datasets developed by The National Center for Education Statistics (NCES), is based on the following measures: parental education, parental occupation, items in the home reflecting either wealth or educational resources (e.g., dishwasher, books, magazines, although homeownership is not included), and family income. Three key theoretical, policy, and statistical arguments support the use of SES.

Research on college-choice has defined the concepts of "wealth" (broadly conceived) in several ways (See Appendix I: Wealth Matrix). Family income is the prevailing measure of wealth. Fifteen out of the 30 seminal college-choice studies we examined relied on family income as a wealth measure. Most income-based studies relied on students' self-reported information (11 out of 16). On two occasions, financial aid records were used for verification. In eleven studies, income was divided into intervals, often arbitrarily defined. In seven of those income-based studies poverty thresholds were employed, as developed by the U.S. Census Bureau. Next to income, SES was the most commonly used wealth measure (11 out of 30).

Adelman (1998) points to the problematic nature of using income as the sole indicator of family wealth, especially when the data are self-reported. Research contrasting student's self-reported income data against parent-reported income supports this observation. Fetters, Stowe, and Owins (1984), for example, examined the quality of responses from high school students to questionnaire items and found low levels of agreement between students' and parents' reports of family income and parental occupation. Fetters and his colleagues, however, reported high validity coefficients when income, parental education, and parental occupation were combined into a single indicator: socioeconomic status. Likewise, Adelman (1998) found that a single SES composite variable "washes out some (but not all) of the potential distorting effects of contradictions, anomalies, and outliers in its component parts" (p. 23). Fetters and associates' results, combined with Adelman's analyses, support using single composites that merge measures of family educational and occupational attainment and other measures of status and relative advantage. In addition to its reliability properties, Stevens and Featherman (1981) found the socioeconomic status index to be a valid correlate of such important measures of attainment as occupational prestige.

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[4]Though Duncan (1961) developed the widely used socioeconomic index (SEI) to predict occupational prestige, socioeconomic status (SES) has become the preferred yardstick to reflect potential for social and economic mobility bestowed by one's family background. This practice is particularly evident in the college choice-persistence literature. Thirty-seven percent of the studies we reviewed relied on some variation of SES (see Appendix I).

A Profile: Who Is Lowest-SES?

A number of points may shed light on the characteristics and backgrounds of lowest-SES students. The fact that low socioeconomic status is neither a predictor of race is important, however, additional knowledge of what lowest-SES status typically represents is a critical element necessary to understand the nature of the lowest-SES student experience. As evidenced by Table 1, income is a strong but not absolute predictor of SES status. Nearly one-third of families in the lowest-SES quartile report family incomes in the middle or high categories. As discussed in greater detail above, this finding may be susceptible to error given Adelman's (1998) concern over the self-reported nature of the data. Also relevant, but discussed in greater detail above, is the lack of association between race and SES quartile. Gender does not play an important role in the prediction of status either.

Table 1. Income, Parental Education, Gender, and Ethnicity by SES Quartile of 1988 8th Graders

		SES				Degree of Association
		Lowest	Middle Lowest	Middle Upper	Highest	
Income	Low	70.5%	36.7%	21.0%	5.9%	.425
	Middle	25.3%	57.6%	68.4%	55.0%	
	High	4.2%	5.7%	10.6%	39.2%	
Parents Highest Education	HS or less	77.0%	38.3%	9.7%	0.7%	.655
	Some College	22.5%	58.7%	71.0%	16.4%	
	College Grad	0.5%	3.0%	19.3%	82.9%	
Gender	Male	47.7%	49.5%	50.6%	52.4%	.034
	Female	52.3%	50.5%	49.4%	47.6%	
Ethnicity	Asian / Pacific Islander	2.4%	2.8%	3.5%	5.1%	.183
	Hispanic	22.1%	9.8%	6.1%	3.9%	
	African American	22.7%	14.3%	10.9%	6.8%	
	Native American	2.5%	1.5%	1.4%	0.4%	
	White	51.2%	71.6%	78.1%	83.6%	

Note: Estimates are based on the NELS:88 panel weight (F3PNLWT)

Parental level of education, more so than income, however, does begin to address characteristics more central to an understanding of the issues lowest-SES students face throughout their college choice process. After all, college education is a cultural asset critical in social mobility (McDonough, 1997). Using a sample of 1995 low-income high school students who took the SAT, King (1996) noted that low-income high school seniors reporting *planning* to

attend college at higher rates than expected had parents familiar with higher education. When considering those parents with at least some exposure to the requirements of college and the college choice process, our results indicate that at most 23 percent of lowest-SES parents can provide their children with any guidance based on first-hand collegiate experiences (see Table 1). In contrast, nearly all of highest-SES students (99.3%) grew up in families knowledgeable of postsecondary education.

Parental education is not, however, the only differential factor that is affecting lowest-SES students on the path to college. Lowest-SES students also tend to be differentially "at risk." Chen and Kauffman (1997) found that the likelihood of dropping out of high school was in direct proportion to the extent the student has: a) a record of poor academic performance during junior high school, b) a history of high school dropouts in the family, c) been held back a grade, d) been raised by a single parent, and e) changed schools more than twice. These five risk factors tend to be associated with lowest-SES students more so than students from other SES groups (see Table 2).

Table 2. Risk Factors by SES Quartile

	SES				Degree of Association
	Lowest	Middle Lowest	Middle Upper	Highest	
Student averaged Cs (2.5) or less in grades 6-8	53.4%	41.9%	33.5%	18.5%	.267
Student has other siblings that dropped out of high school	27.0%	16.1%	12.5%	4.1%	.232
Student was ever held back a grade	30.7%	18.5%	13.8%	9.0%	.210
Student from a single parent family	33.1%	21.1%	18.2%	12.9%	.181
Student changed schools more than twice	33.8%	30.3%	29.2%	28.3%	.045

NOTE: Estimates are based on the NELS:88 panel weight (F3PNLWT)

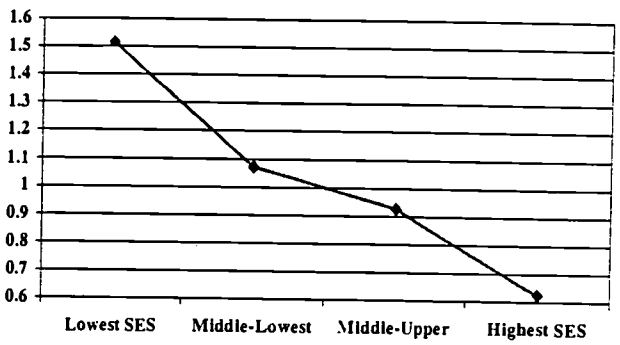
The degree of association for three of Chen and Kauffman's risk factors and SES is fairly high and warrants attention. Lowest-SES students are 35% more likely to receive lower grades during the 6th through the 8th grades than are their high-SES counterparts. This period may be critically important, as this is the point where powerful predispositions toward college attendance are formed. Furthermore, this is the time when students lay the academic foundation upon which

other subject matter is built during high school. Failure to achieve adequate academic preparations, even at this early stage, may inhibit a student's future prospects.

Additionally, lowest-SES students are almost 23% more likely to have older siblings that have opted to not complete high school. This characteristic may be extremely damaging to a student's prospects because first-hand knowledge of dropping out may increase acceptance of this path as a viable alternative. Finally, lowest-SES students tend to be held back one grade more often that their higher socioeconomic peers. Only 9% of high-SES students are held back a grade, whereas 30% of lowest-SES students are held back at least once during their academic career. Not only do each of these five risk factors tend to affect lowest-SES students more when the factors are considered individually, but when examining the risk factors as a group, they are more prevalent among the lowest-SES students.

The frequency with which 8th graders experience at-risk factors correlates negatively with their socioeconomic status (r= -.294). The higher a student's socioeconomic status the less likely the student is to be influenced adversely by the presence of risk factors (see Figure 8). On average, lowest-SES students tend to have at least one risk factor influencing their high school performance, whereas the upper middle and highest-SES students have less than one factor exerting an influence on their chance of success. This difference, though small, is withstanding. Chen and Kauffman showed that an increase in just one more at-risk factor could quadruple the likelihood of dropping out from high school.

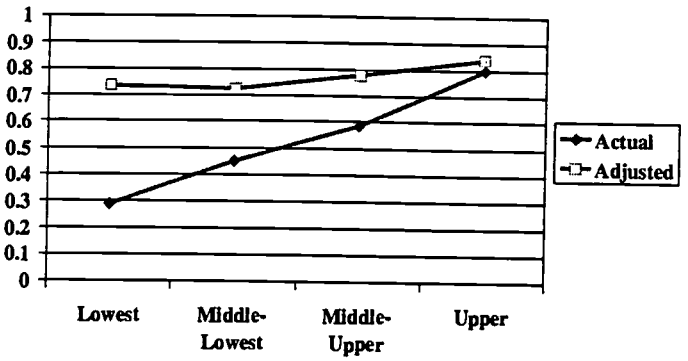
Figure 8. Mean at-risk factors across SES quartiles



Acquisition of college qualifications

Securing at least minimal college-qualifications correlates with socioeconomic status (r =.377). In the aggregate, lowest-SES students are 51%, 30% and 17% less likely to secure minimal college qualifications than their highest, middle-upper, and middle-lowest SES counterparts (see Figure 10).

Figure 10. Probabilities of securing at least minimal college qualifications by 12th grade by SES. Actual & adjusted



Note: Adjusted probabilities are estimated using a logistic regression model controlling for background, ability, parental involvement, college plans, and at risk-factors (see Appendix IV, Table IV.1)

The SES-gap narrows substantially once such influential college-choice factors as parental involvement and ability are taken into account (see Table 3 and adjusted probabilities in Figure 10). Net of these college-choice factors, the lowest-SES students are nearly 15% less likely to secure minimal college qualifications next to their upper-SES counterparts. Parental involvement in a student's education is pivotal for his or her chances of fulfilling the college qualification task. Each unit increase in parental involvement accounted for an 18% increase in a high school student's likelihood of securing minimal college qualifications. Early planning for college also matters. Students who planned to attend a four-year institution by the time they were in the 8th grade were 17% more likely to secure minimal college qualifications by the end of the senior year. On the negative side and regardless of socioeconomic status, experiencing at-risk factors such as coming from single-parent families, having siblings who dropped out of high school, changing schools, having poor academic performance or repeating grades decreased the chance of becoming college qualified by 11%.

Table 3. Change in the probability of securing at least minimal college qualifications by 12 ^{h} grade due to background, planning for college at eight grade, parental involvement, ability and at-risk actors.

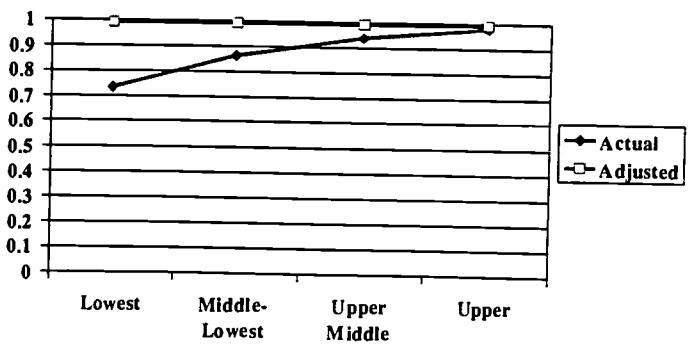
Factor	All	Socioeconomic Status			
		Lowest	Middle Lowest	Middle Upper	Upper
Second Lowest-SES	-0.015	-	-	-	-
Upper Middle SES	0.058**	-	-	-	-
Upper SES	0.146***	-	-	-	-
Female	0.026	0.021	0.049	0.032	-0.002
Hispanic	0.014	0.029	0.067	0.018	-0.080
African American	0.014	0.077	0.046	0.043	-0.163***
Asian American	0.132***	0.147	0.125	0.209***	0.030
Planned for college at 8th grade	0.168***	0.121***	0.191***	0.184***	0.102***
Parental involvement	0.181***	0.150***	0.157***	0.134***	0.146***
Ability at 8th grade	0.029***	0.025***	0.031***	0.030***	0.018***
At-risk factors at 8th grade	-0.110 ***	-0.084***	-0.116***	-0.125***	-0.054***
Number of cases	8,808	1,896	2,130	2,298	2,484
Baseline p	0.537	0.286	0.454	0.589	0.796
Model X^2, df	4,078,11**	526.44,8***	879.87,8***	881.89,8***	653.93,8**
PCP	* 78.9%	75.6%	75.3%	77.7%	* 85.6%

Note: Each case was weighted by the NCES panel weight F3PNLWT divided by the average weight for the sample (average weight = 199.02) to minimize the effect of large sample sizes on standard errors. Delta-p represents the change in the probability of securing at least minimal college qualifications due to a unit change in the factor variable under consideration. PCP represents the percent of cases correctly predicted by the model. PCPs higher than 55% signify a good fit for the model (see Cabrera, 1994).

High school graduation

The rate at which students complete their high school education correlates with their socioeconomic status (r = .291). The high school graduation rate among the poorest high school students was 73%, a figure that sharply contrasts with the 98% graduation rate exhibited by the

Figure 11. Probabilities of securing a high school diploma by SES. Actual & adjusted



Note: Adjusted probabilities are estimated using a logistic regression model controlling for background, ability, parental involvement, college plans, and at risk-factors (see Appendix IV, Table IV 1)

high-SES students (see Figure 11).

This 16% gap in the graduation rate narrows to nearly half once college-choice factors are considered. Securing college qualifications most influenced completing high school. Across all SES categories, securing college qualifications increased the chance of completing high school by 11.4 %. The critical role played by college qualifications was particularly evident among the lowest-SES students. For these students, chances of completing high school increased by nearly 26% when minimal college qualifications were obtained by the student's senior year (see Table 4).

Table 4. Change in the probability of securing a high school diploma due to background, planning for college at eighth grade, parental involvement, ability, at-risk factors and securing minimal college-qualifications.

		Socioeconomic Status			
Factor	All	Lowest	Middle Lowest	Middle Upper	Upper
Second Lowest-SES	.009	-	-	-	-
Upper Middle SES	.055***	-	-	-	-
Upper SES	.076***	-	-	-	-
Female	-.033**	-0.040	-0.017	-0.075**	-0.001
Hispanic	.019	0.130***	0.006	-0.151***	0.006
African American	-.002	0.091*	-0.084*	-0.015	0.017
Asian American	.035	0.073	0.028	0.019	0.011
Planned for college at 8th grade	.024*	0.003	0.067***	-0.011	-0.001
Parental involvement	.053***	0.092**	0.006	0.051***	0.014*
Ability at 8th grade	.007***	0.011***	0.008***	0.006***	0.001
At-risk factors	-.046***	-.053***	-0.085***	-0.021*	-0.005
College qualified	0.114***	.256***	0.131***	0.056***	0.019***
Number of cases	8,807	1,896	2,130	2,298	2,483
Baseline p	0.881	0.733	0.863	0.939	0.980
Model X^2, df	1459.45,12***	327.08,9***	448.34,9***	256.13,9***	80.45,9***
PCP	93.9%	85.4%	92.2%	96.9%	99.1%

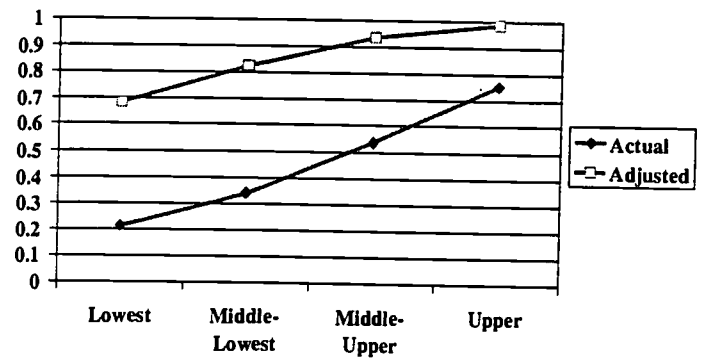
Applying to college

Applying to college varies in direct relation with socioeconomic status (r = .414). In the aggregate, differences in college application rates between the poorest and the highest-SES high school students are vast. Whereas 21.3% of the socioeconomically disadvantaged high school students applied to college, 76% of upper-SES high school students submitted college applications to four-year institutions (See Figure 12 and Table 5).

Controlling for relevant encouragement, qualifications, and other college choice factors reduced the gap in college application rates between lowest-SES and upper-SES students from 55% to 26.4%. While high socioeconomic backgrounds bestow high school students with a clear

advantage, it is evident that motivational, college qualifications, as well as family and school based resources all boosts students' likelihood of applying to a four-year institution. High school students that aspire for at least a bachelor's degree are nearly 28% more likely to apply to college than those holding lower formal education aspirations. Aspiration for an advanced degree increases application rates still further by 34%. High school students whose parents hold expectations for a bachelor's degree are 26% more prone to apply to college. Securing college qualifications during high school increases a students' chances of apply to a four-year college or university by 14%. High school resources devoted to assist in the college application process also make a difference. Seniors who rely on high school counselors for writing college application essays and filling up paper work are 8% and 11% percent more likely to apply to college.

Figure 12. Probabilities of applying to a 4-yr institution by SES. Actual & adjusted



Note: Adjusted probabilities are estimated using a logistic regression model controlling for background, ability, parental involvement, college plans, and at risk-factors within each SES quartile (see Appendix IV, Table IV. 1).

Information about financial aid also helps. Every unit increase in the amount of information the senior has regarding financial aid enhances his or her chances to apply to college by 5%.

Table 5. Changes in the probability of applying to college among 12th graders due to background, at-risk factors, parental involvement, parental educational expectations, college-qualifications, information & resources, and degree aspirations.

Factor	All	Socioeconomic Status			
		Lowest	Middle Lowest	Middle Upper	Upper
Second Lowest-SES	.020	-	-	-	-
Upper Middle SES	.145***	-	-	-	-
Upper SES	.264***	-	-	-	-
Female	-.009	-.025	.038	.019	-.053
Hispanic	-.000	.009*	-.110	-.077	.009
African American	.125***	.108*	.129*	.225***	.005
Asian American	.125***	.171	.198	.109	.026
Risk factors	-.065***	-.052***	-.073***	-.029	-.065***
Parental involvement	.072***	-.030	.143***	.052	.059
Parent expected some college	-.002	.009	-.037	-.064	.106
Parent expected bachelor's	.255***	.235***	.285***	.219***	.166***
Parent expected advanced degree	.219***	.171**	.212***	.184***	.166***
College-qualifications	.140***	.122***	.137***	.127***	.091***
Information on Financial Aid	.050***	.053***	.064***	.050***	.016
Help in college application	.113***	.067	.091*	.164***	.050
Help in financial aid procedures	.029	.022	.028	.018	.021
Help in college essays	.081***	.060	.070	.047	.071**
Aspired for some college	-.014	.008	.011	-.054	-.042
Aspired for a Bachelor's	.276***	.306***	.300***	.246***	.137***
Aspired for advanced degree	.336***	.388***	.333***	.288***	.186***
Number of cases	7,417	1,393	1,732	2.022	2.270
Baseline p	.467	.213	.342	.537	.755
Model X^2, df	44422.51,20***	666.15,17***	1.031.06.17***	1.014.28.17***	791.78,17***
PCP	82.8	82.8	81.0	80.4	87.0

Note: Each case was weighted by the NCES panel weight F3PNLWT divided by the average weight for the sample (average weight = 199.02) to minimize the effect of large sample sizes on standard errors. Delta-p represents the change in the probability of applying to college due to a unit change in the factor variable under consideration. PCP represents the percent of cases correctly predicted by the model. PCPs higher than 55% signify a good fit for the model (see Cabrera, 1994).

Intervention Strategies

What matters?

Our results clearly show that intervention strategies seeking to increase college participation rates among socioeconomically disadvantaged high school students need to be holistic. Given the high degree of interdependence between family and school based resources. it is unrealistic to assume that one "single shot" policy by itself would facilitate their success on the path to college.

Targeting the acquisition of college qualifications seems to be a most fruitful area for policy intervention. Its importance reverberates in two out of the three tasks examined by this study. The critical importance of being college qualified extends well beyond the application process. As masterfully shown by Adelman (1999b), the academic resources secured at the elementary and secondary education levels make completion of a college degree a certainty. Programs must ensure that 6th, 7th and 8th graders, and especially their parents, are aware of curriculum needed to succeed in college.

Becoming college qualified, in turn, presupposes high parental involvement in school activities as well as early planning for college (Henderson & Berla, 1994). And, as our literature review shows, parental involvement is directly related to the amount of information parents themselves have regarding college. First-hand exposure to postsecondary education greatly facilitates access to this information. College educated parents are more likely to see the long-term benefits associated to a college degree and to communicate this information to their children (Coleman, 1988). They are also more knowledgeable of the curricular requirements and mechanisms to finance college education (Flint, 1992, 1993; McDonough, 1997). In this respect, lowest-SES students are most disadvantaged. Whereas 99.3% of upper-SES parents have some formal college education, barely 23% of lowest-SES parents have been exposed to higher education (See Table 6). It stands to reason that information efforts targeting lowest-SES parents would yield the highest pay-off.

Parental involvement in children's school activities, as well as parental educational expectations are likely to be enhanced if lowest-SES parents see a connection between a college degree and economic and social benefits. Equally important is parental knowledge of curricular strategies and financial planning needed to meet the goal of securing a college education. Information on financial planning need not be detailed; providing parents with general, concise and clear data on college costs and financial aid may suffice to motivate them to start saving for their children's postsecondary education and to learn about different financial aid packages (Hossler, Smith & Vesper, 1999; Olivas, 1985). A plausible source of this information is the postsecondary institution itself (Adelman, 1999a). Colleges and universities are in the unique position of explaining to parents the importance of curriculum planning as early as in the 8th grade. They are well aware of the specific academic skills and knowledge needed to undertake different academic majors. Moreover, colleges and universities' expertise with financial aid application procedures uniquely qualify them to assist lowest-SES parents to overcome their fears of qualifying for need-based financial aid (Olivas, 1985).

School partnerships, as early as the elementary level, constitute another promising domain in which parental involvement can be fostered the most. A lowest-SES student's acquisition of study habits, literacy skills, and commitment to life-long learning seems to be fostered the most when involvement comes from both parents and schools (Clark, 1983). Partnerships have an extra advantage: they provide information and skills lowest-SES parents themselves may need to become involved in decisions pertaining to curricular planning and school activities for their own children (Henderson & Berla, 1994)

Being aware of the curriculum and other college-related requirements one needs to meet may not suffice when the elementary and secondary institutions do not provide what Adelman

(1999a) dubs an "opportunity-to-learn." As noted by McDonough (1997), differences in college attendance rates among varied SES groups can be explained in part by the quality of the high school they attended. Little change would take place if the nation's lowest-SES students attend schools lacking labs, engaging and adequate curriculum, innovative instructional techniques, qualified teachers, appropriate computer equipment, books, and academic and career advising to make this "opportunity-to-learn" a vibrant reality.

The talent search program: A beacon of hope

Based on the findings of our analysis, it stands to reason that programs that focus their attention on those factors enabling students to successfully complete the three critical tasks on their path to college will most benefit lowest-SES students. The Talent Search program seems to be an example of one such program.

In 1965 the Talent Search Program, originating in the Higher Education Act, was created to help low-income Americans whose parents lack college education offset institutional and sociological disadvantages on their path to college (Trent, 1992). In so doing, this program sought to identify talented individuals to "improve college preparation," "complete secondary school," and encourage students to "enroll in postsecondary education" (Trent, 1992, p.1). When crafting the Talent Search program, legislators emphasized the three critical tasks investigated by this study.

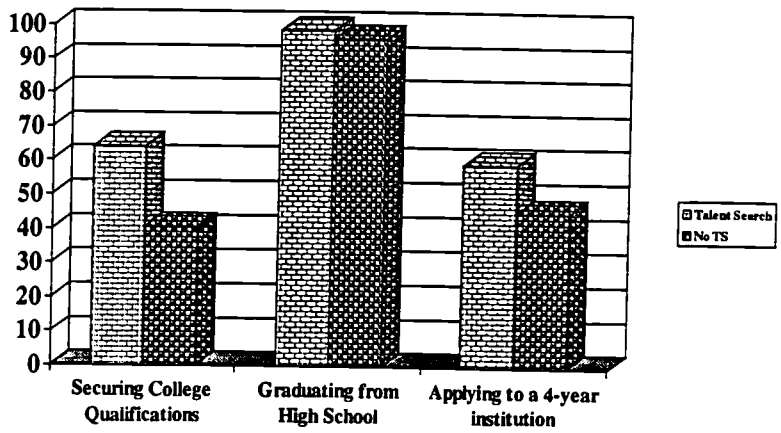
In recent years, a vast body of literature has confirmed the insight and wisdom of those early policy makers (Becker, 1994). Indeed, children are more likely to succeed on their path to college when parents are involved in their learning both at home and at school (Henderson & Berla, 1994). This report also confirms the efficacy of the three-part emphasis. When we examine Talent Search participation among lowest-SES students in the National Education Longitudinal Study database, we find that two out of the three objectives are being met (See Figure 17).

Trio participants are approximately 24% more likely to become college qualified. Though small, the correlation between Talent Search participation and securing at least minimal college qualifications is positive (r=.229). There are no distinctions in the high school graduation rates between participants and non-participants (r=-.076). However, Talent Search participants are almost 14% more likely to apply to a 4-year institution immediately following high school graduation. The correlation between participation and applying to a 4-year institution is small but positive (r=.135). Of these three relationships, the one between Talent Search participation and securing college qualifications is the strongest.

Earlier we reported that having greater information of financial aid was an important factor in increasing the probability of applying to college among lowest-SES students. In this

context, it is important to note that Talent Search participants, on average, relied upon one more information source than did non-participants (F=2540.303; *df*=1; p<.001).

Figure 13. Percentage differences in securing college qualifications, graduating from high school and applying to college among lowest-SES students



Note: Participation rates estimated via panel weight (F3PNLWT)

Conclusions

This report identified three critical tasks all students need to complete on their path to enrollment in a four-year institution. Comparative analysis of lowest and highest-SES patterns associated with the completion of these three tasks reveals substantial differences between the two groups. These SES-gaps are reduced if not even out once a number of influential school-based and family originated factors are taken into account. In other words, family-based, school-based and individual-based practices are as important if not more than is family's SES in becoming college-qualified, graduating from high school and applying to a 4-year institution. Our findings along with the extant literature validate initiatives and programs seeking to provide critical encouragement, information and college preparation resources to socio-economically disadvantaged youth. The Talent Search program is one such program.

Appendix I
Definitions of Wealth

An extensive review of the literature on college choice, collegiate experiences and outcomes was conducted in search of seminal papers examining the role of wealth related indicators (e.g., income, parental education, socioeconomic status). Thirty seminal studies were identified through ERIC database searches and solicitations of the expertise of 24 top scholars researching issues of access and persistence in higher education. The studies used a variety of methodologies and data sets to assess the impact of wealth measures on a range of higher education issues. Each study was analyzed to ascertain collegiate outcome(s) addressed, data source, and definition of wealth. Wealth measures varied widely across the studies being family income the most commonly used (50%). Thirty-eight percent of the college-choice studies relied on SES.

		Databases Used								
Researchers	**Outcome(s)**	BPS:89-90	NPSAS	HSB:So	HSB:Sr	NLS-72	NELS:88	Inst.	Multi-inst.	**Definitions of Wealth**
Adelman (1998,1999b)	Persistence to graduation	X		X		X				2 Lowest-SES and SESINC composite quintiles
Berkner &Chavez (1997)	Enrollment						X			Low income (<$25,000), middle-income ($25,000 - $74,999) and high-income ($75,000 or more). Income reported by parents in 1988.
Bowen & Bok (1998)	Graduation, academic outcomes, civic participation & satisfaction with life								X	Lowest-SES(Three levels). SES scores based on self-reported family income and parental education.
Cabrera, et al. (1990)	Persistence				X					2 lowest-SES quartiles
Choy (2000)	Financing college						X			Income below 125% of the federally established poverty threshold given family size
Choy & Ottinger (1998)	College choice		X							Low income (<$30,000), middle income ($30,000-$69,999) and high income ($70,000) or more. Dependent students.
Choy & Premo, MPR (1996)	Financing College	X	X							Income below 125% of the federally established poverty threshold given family size
Cuccaro-Alamin & Choy (1998)	Financing College	X	X							Lowest-SES quartile (middle 2 combined)
Flint (1992)	College Choice								X	Self-reported family income by $10,000's (compared to Census %), no breakdown analysis for low income students
Flint (1997)	College Choice:		X							Self-reported family income by $10,000's (compared to Census %), no breakdown analysis for low income students

Definitions of Wealth (Continues)

Researchers	Outcome(s)	Databases Used								Definitions of Wealth
		BPS:89-90	NPSAS	HSB:So	HSB:Sr	NLS-72	NELS:88	Inst.	Multi-inst.	
Hearn (1992)	College Choice				X					SES scores
Horn & Chen, MPR (1998)	College Choice & Persistence						X			Lowest-SES quartile and 5 at-risk factors
Horn & Nuñez (2000)	Enrollment						X			1991 Parents' reported income Low (<$25,000); middle ($25,000-$74,999) and high ($75,000 or higher)
Jackson (1978)	College Choice-Application Stage					X				Lowest-SES third
King (1996)	College Choice: Planning to attend								X	Self-reported <$20,000 (lowest quartile nationally)
Leslie, Johnson & Carlson (1977)	College Choice: Planning to attend							X		Self-reported Low ($7,500); middle ($7,500-$15,00); and high (>$15,000)
Leslie & Brinkman (1986)	Degree Completion								X	Summary of 25 different institutional research studies
Leslie & Brinkman (1988)	College Choice								X	Summary of 25 different institutional research studies
Manski & Wise (1983)	College Choice Persistence					X				Self-reported family income Lower (<$16,900); Middle ($16,900 - $21,700) & Upper (>$21,700)
McPherson & Schapiro (1998)	College Choice								X	Self-reported family income 1980 <$10,000; $10,000-$15,000;$15,000-$30,000; $30,000-$50,000, $50,000-$100,000; and >$100,000 1994 <$20,000; $20,000-$30,000;$30,000-$60,000; $60,000-$100,000, $100,000-$200,000; and >$200,000
Nuñez & Cuccaro-Alamin, MPR (1998)	First Generation College Students	X								Lowest-SES quartile (middle 2 combined)

Definitions of Wealth (Continues)

Researchers	Outcome(s)	Databases Used								Definitions of Wealth
		BPS:89-90	NPSAS	HSB:So	HSB:Sr	NLS-72	NELS:88	Inst.	Multi-inst.	
Perna (2000)	Enrollment						X			Parents' education from (1) less than high school to (5) advanced degree
Stampen & Cabrera (1988)	Persistence								X	Financial aid records. Classification based on demonstrated financial need: Need 1 (mostly Pell grants); Need 2 (based on GLS analysis system); NonNeed (based on criteria other than economic need) and Nonaided.
St. John & Noell (1989)	College Choice: Applying & Enrolling				X	X				Self-reported family income, no breakdown analysis for low income students
St. John (1990a)	College Choice: Enrollment			X						Self-reported family income: <$15,000, $15,000-24,999, $25,000-39,999, and >$40,000
St. John (1990b)	Persistence				X					Self-reported family income: <$15,000, $15,000-24,999, $25,000-39,999. and >$40,000
St. John (1994a)	Pricing			X						SES quartiles and 3 Need simulations (1- mostly Pell grants, 2- eligibility for other need-based aid, 3- not considered eligible for need-based aid)
St. John. et al. (1994)	Persistence		X							<$11,000, $11,000-29,999, $30,000-$59,999, and >$60,000, no breakdown analysis for low income students
St. John. et al. (1996)	Choice & Persistence		X							<$11,000,$11,000-29,999, $30,000-$59,999, and >$60,000, no breakdown analysis for low income students

Appendix II

Weights Employed in the Analyses

1988 Panel weight (F3PNLWT). Adjusts the NELS:88 data to reflect the number of 8th graders in the population in 1988 (N=2,968,427).

Weight for 1992 high school graduates (F3QWT92G). Adjusts the NELS:88 data to reflect the estimated number of subjects in the population who received a high school diploma between September 1, 1991 and August 31, 1992 (N=2,356,268).

Adjusted weight (DWEIGHT). Perna (2000) correctly notes that the use of weights tends to affect estimated standards errors and parameters. Consequently, she suggests estimating adjusted weights resulting by dividing the original weight by the average weight for the sample as a method to minimize the effect of large sample size on standard errors. Accordingly, the panel weight F3PNLWT was divided by the average weight in the sample (average weight = 199.02) resulting in DWEIGHT. The weighted sample using F3PNLWT produces 2,968,427 cases whereas DWEIGHT yielded 14,915. All logistic regression results are based on DWEIGHT. As shown below, DWEIGHT adjusts the original sample size reproducing the proportion of subjects the original weight was designed to capture without artificially increasing the original sample size.

SES	1988 Panel Weight (F3PNLWT)		DWEIGHT	
	N	%	N	%
Lowest	728043	24.5	3658	24.5
Middle-Lowest	727018	24.5	3653	24.5
Middle-Upper	732705	24.7	3682	24.7
Highest	780408	26.3	3921	26.3
Total	2,968,174	100%	14,914	100%

Appendix III

Table III.1. Description of NELS:88 variables employed

Background variables

Gender (F3SEX) coded as 0 (Male) and 1 (Female) and ethnicity (F3RACE). Ethnic categories included Hispanic (1), African American (2), Asian American (3) and White (4). Native Americans, due to their small number, were excluded from the logistic regression analyses.

Socioeconomic Status

Quartile coding of base year SES (BYSESQ). This variable was built upon respondent's socioeconomic status at the time he/she was an 8th grader in 1988. Socioeconomic status, as defined by variables within NCES datasets, includes the following measures: parental education, parental occupation, items in the home (i.e., dishwasher, books, etc.), and family income. This variable ranged from 1 (Lowest-SES) to 4 (Upper-SES). As shown in table below, estimates of subjects across SES categories vary as a function of the weight under consideration.

SES	1988 Panel Weight (F3PNLWT)		1992 HS Grads Weight (F3QWT92G)		Unweighted	
	N	%	N	%	N	%
Lowest	728043	24.5	386279	18.1	3663	26.5
Middle-Lowest	727018	24.5	514718	24.1	3389	24.5
Middle-Upper	732705	24.7	569821	26.7	3345	24.2
Highest	780408	26.3	666648	31.2	3423	24.8
Total	2,968,174	100%	2,137,466	100%	13820	100%

Parental Income

Parents' reported 1991 gross family income form all sources before taxes (F2P74). To maintain consistency with Berkner and Chavez (1997), 13 income categories were collapsed into three: low (less than $25,000), middle ($25.000 to $74,999) and high ($75,000 or more).

Ability at 8th grade

Composite standardized score (BY2XCOMP) of the reading and mathematic tests applied to all subjects in 1988. The test score ranges from 30.93 to 75.81.

High Math

Based on high school transcript data drawn from the High School & Beyond/Sophomore cohort, Adelman (1999b) demonstrated that the academic intensity and quality (ACRES) of a student's high school curriculum is a better predictor of degree attainment next to standardized tests, high school ranks and cumulative grade point average. Among the components of ACRES, emphasis on math, in particular, proved to be one of the best predictors of college success. Adelman found that taking math courses beyond Algebra II doubled a high school student's chances to complete a college degree. Horn and Nuñez (2000) reached similar conclusions when

they examining enrollment behavior among the high school class of 1992. Using high school transcript data, our approximation to Adelman's HIGHMATH is made up of the following categories:

1. None
2. Algebra I
3. Algebra I and/or Geometry
4. Through Algebra II
5. Beyond Algebra II

College Qualification Index

Developed by Berkner and Chavez (1997), the college-qualification index (CQCOMV2) attempts to approximate college admissions criteria. Thus, the index is based on cumulative academic course GPA, senior class rank, the 1992 NELS aptitude test scores, and the SAT and ACT scores. Moreover, Berkner and Chavez adjusted this index to account for having taken rigorous high school academic work. The college qualification index ranges from 1 (not qualified) to 5 (very highly qualified). We found the college-qualification index to correlate significantly with the HIGHMATH, a scale developed after Adelman's HSB/So HIGHMATH variable (1999). The correlation between CQCOMV2 and HIGHMATH was .723. Berkner and Chavez reported that meeting minimal college qualifications significantly predicts college enrollment. To maintain consistency with Berkner and Chavez's approach, we dichotomized the college-qualification index to reflect the absence (0) or presence of being at least minimally college qualified. We used this dichotomized variable as both dependent and predictor in logistic regression models depicted in tables III.2 and III.3 in appendix III. CQCOMV2, in its original metric, was used in the regression model displayed in table III.4.

At-risk factors

Composite of five dichotomous NELS:88 variables indicating whether the 8th grader came from a single-parent family (BYFCOMP), had siblings who dropped out from high school (asked in the 10th grade, (F1S94)), changed school two or more times from 1st to 8th grade (BY40), had average grades of C or lower from 6th to 8th grade (BYGRD68), and repeated an earlier grade from 1st to 8th grade (BYS74). The scale ranges from 0 to 5.

Parental Involvement in Students Education

Composite of six items reflecting the extent to which subjects agree having discussed with parents: a) school courses (F1S105A), b) school activities (F1S105B), c) thing studied in class (F1S105C), d) school grades (F1S105D), e) how to prepare for the ACT/SAT test (F1S105F), and d) going to college (F1S105G). Each item was assessed in a Likert scale ranging from 1 (never) to 3 (often). Perna (2000) found these six items factoring into a single highly reliable (r=.83) and predictive scale of college enrollment for the 1992 high school class.

Highest parental expectations

Derived from the highest expectations respondents' felt either their mother (F2S42B) or father (F2S42A) had for them in their education, this variable is made of the following categories:

1. Parents had no postsecondary expectations or the respondent was unsure what their expectations were.
2. Parents expected the respondent to attend either a 2-year academic or technical college, a trade school or some college.

3. Parents expected the respondent to complete a bachelor's degree.
4. Parents expected the respondent to secure advanced degrees (MS/PhD/Professional)

Information sources on financial aid

Factorially derived scale made up of five NELS:88 items indicating whether the 12th grader read information on aid from the US Department of Education (F2S58D) or colleges /universities (F2S58E), or talked to high school counselors (F2S58A), college representatives (F2S58B), loan officers (F2S58C) or adults (F2S58G) about financial aid. The factor solution accounted for 48.4% of the correlation matrix. The corresponding scale has an alpha reliability of 0.73. Factor loadings are reported below.

Information Sources on Financial Aid	Loadings
Teachers/counselors (F2S58A)	0.704
College representative (F2S58B)	0.706
Read DOE information about financial aid (F2S58D)	0.599
Read information on aid from colleges/universities (F2S58E)	0.761
Other adults (F2S58G)	0.700

High school based support

Three variables were identified signifying as to whether the student received help from his or her high school with college (F2S57A) and financial aid (F2S57C) application procedures, and assistance in writing college application essays (F2S57B).

Planned for college at 8th grade

Relied upon by Berkner and Chavez, BYS45 identifies the highest degree planned to obtain by the 8th grader. We created a dichotomous variable signifying whether the 8th grader planned to obtain at least a four-year degree (1) or not (0).

Planned ever to attend PSE

Developed by Berkner and Chavez, PLANS92 captures 12th plans to continue their formal education at some point after high school completion. Berkner and Chavez coded plans in terms of type of institution planned to attend. The categories are:

1. No postsecondary institution
2. Student planned to attend either a 2-year academic or technical college, or a trade school.
3. Respondent planned to attend a 4-year college.

Educational expectations in 1992

Developed by Bekner and Chavez, F2ASPIRE92 captures 12th graders' highest educational expectations after high school completion. The categories are:

1. No postsecondary education.
2. Respondent expected to complete trade or vocational school or some college.
3. Respondent expected to complete a bachelor's degree
4. Respondent expected to complete an advanced degree (MS/PhD/Professional)

Applied to a 4-year institution

Developed by Berkner and Chavez (1997), EVR4YRA signifies whether or not the 12th grader applied to a 4-year institution. Though based on self-reported data, Berkner and Chavez corrected missing cases as having applied if subjects enrolled at a four-year institution.

First type of Institution Attended as of 1994

Developed by Berkner and Chavez, F3SEC2A1 tracks type of institution attended as of 1994. The categories they developed include:

1. No postsecondary enrollment as of 1994
2. Private, not for profit less-than-year.
3. Public less-than-2yr.
4. Public 2-year.
5. Private, not-for-profit 4-year
6. Public 4-year.

For the purpose of this study categories 2-3 were collapsed into a single category termed: Vocational. Based on the information provided in Berkner and Chavez institution types 2 and 3 did not appear to offer a degree at the associate level. Moreover, several of the analyses they conducted made a clear distinction between category types 2 and 3 and 2-year and 4-year institutional types. Categories 5-6 were collapsed to form the category 4-year. By 1994, college enrollment distribution was as follows:

First Type of Institution Attended as of 1994 (Based on F3SEC2A1)

	N	Percent
None	1,053,663	37.3
Vocational	121,980	4.3
2-yr	610,753	21.6
4-yr	1,039,600	36.8
Total	2,825,995	100.0

Note: Based on panel weight F3PNLWT

Appendix IV

A methodological note on logistic regression

Logistic regression is an ideal method to model the effect of independent variables when the dependent variable under consideration is dichotomous. Logistic regression not only captures the probabilistic distribution embedded in dichotomized measures, but it avoids violations to the assumption of homogeneity of variance and functional specification the direct application of Ordinary Least Squares (OLS) regression models are likely to produce (Aldrich & Nelson, 1986; Cabrera, 1994). Moreover, Press and Wilson (1978) proved the superiority of logistic regression for classification and prediction purposes in relation to discriminant analyses.

Interpretation of results

Baseline p. Observed probability in the dependent variable. For instance, the observed probability that lowest-SES 8th graders would meet minimal college-qualifications by 12th grade is .286; or 28.6 of them got qualified. Observed probabilities are also referred as "unadjusted probabilities". Baseline *p* serves as a benchmark to assist in assessing how much each independent variable contributes to the probability of the dependent variable.

Beta weights. In contrast to OLS, interpretation of logistic parameter estimates is not straightforward. Unlike OLS, the metric of individual coefficients is expressed in terms of logits rather than in terms of the original scale of measurement. This problem is particularly accentuated for categorical variables since the corresponding beta weights represent contrasts among categories summarized in terms of differences of logits. For instance, the gender effect of .106 displayed in table IV.1 indicates that women, on the average, are .106 logit units more likely to secure minimal college qualifications by 12th grade than are males. To overcome this problem, logistic regression results are usually presented in terms of changes in probabilities and adjusted probabilities.

Delta-p. Developed by Peterson (1985), delta-*p* reflects the incremental change in the dependent variable (e.g., meeting minimal college qualifications) due to a unit change in the independent variable (e.g. parental involvement). In table 8, for instance, the delta-p value of .181 associated with parental involvement means that for every unit increase in parental involvement the probability that the 8th grader would secure minimal college qualifications by the 12th increases by 18.1 percent. When the independent variable is a dichotomy (e.g. gender), delta-*p*s are interpreted as differences between the two categories. In table 8, for instance, the delta-*p* of .026 associated with Female, means that females are 2.6 percent points more likely to become college qualified by the 12th grade than they male counterparts.

Adjusted probabilities. Used to estimate corrected probabilities by holding constant the dependent variables at their mean value (Cabrera, 1994; Menard, 1995). Adjusted probabilities, then, control for factors that systematically affect a group in a consistent manner (Bowen & Bok, 1998). Take the case of high school completion among lowest-SES students. At the aggregate, Lowest-SES 8th graders graduate from high school at considerably lower rates than Upper-SES graders (73.3% vs 98.0%), signifying a strong socioeconomic status effect. This SES-size effect all but disappears once background, parental involvement, ability, being at-risk and securing minimal college qualifications are held constant for both groups (90.4% vs 98.0%) see figure and table. In other words, the observed differences in probabilities of high school completion are more the product of at-risk factors that systematically are more present among lowest-SES students than are among upper-SES originated students. We calculated the adjusted probabilities

using the mean values reported in Table III.2 and the logistic parameter estimates depicted in Tables IV.1 through IV.3 using the following formula (see Cabrera, 1994, p. 228).

$$P(Y) = \frac{\text{Exp}\,(B_0 + B_1X_1)}{1 + \text{Exp}\,(B_0 + B_1X_1)}$$

X^2 for the model. Assesses whether the independent variables as a group are significantly associated with the dependent variable (Aldrich & Nelson, 1987).

Proportion of Correctly Predicted cases (PCP). Provides an overall indicator of fit of the logistic regression model paralleling the OLS proportion of variance explained with R^2. This measure involves a comparison between the number of cases that the model predicted as being either 0 (not minimally college qualified) or 1 (being college qualified) against the total sample size. PCP values greater than 55% signify a good fit of the model (see Cabrera, 1994).

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